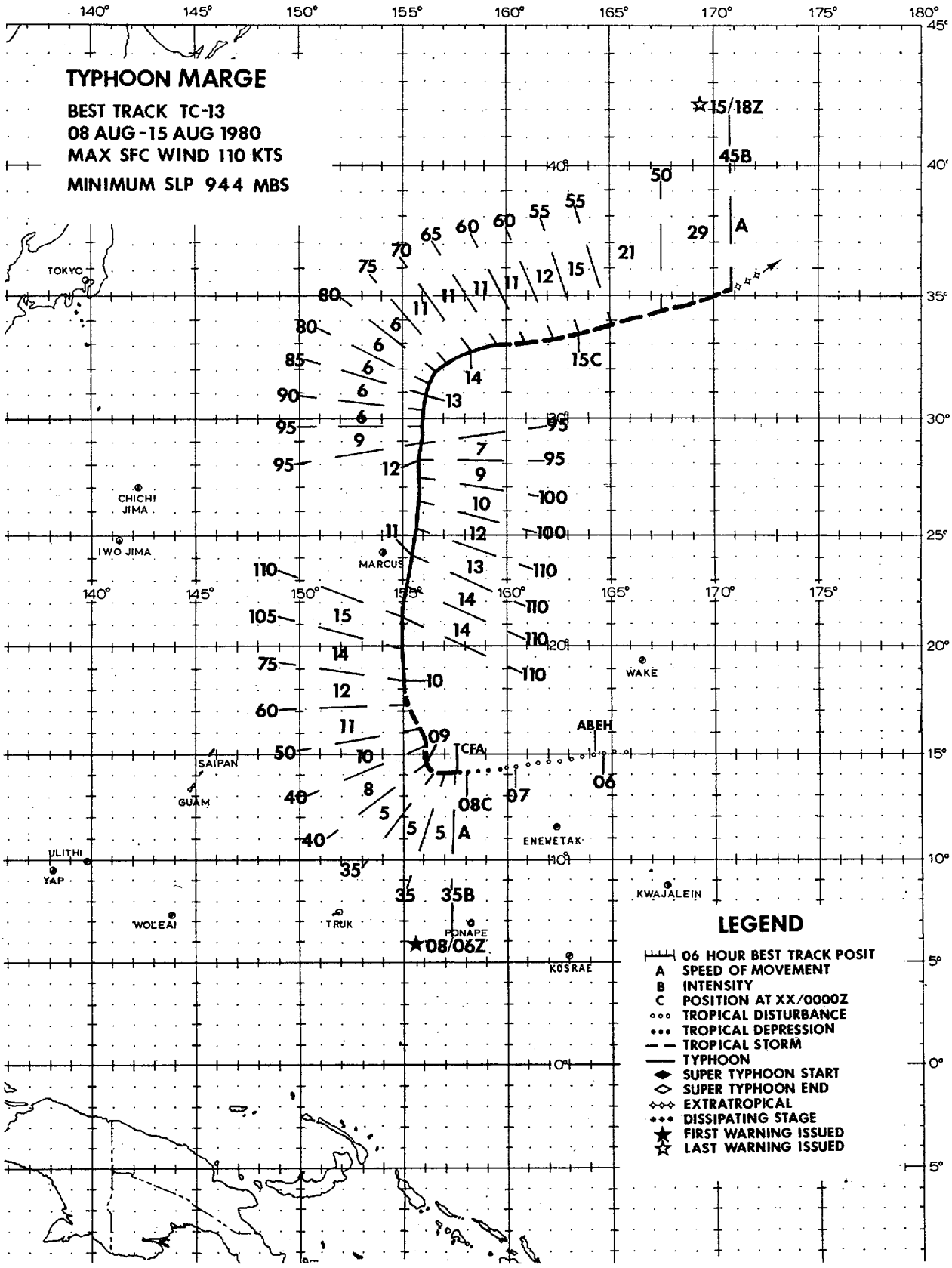
TYPHOON MARGE
BEST TRACK TC-13
08 AUG - 15 AUG 1980
MAX SFC WIND 110 KTS
MINIMUM SLP 944 MBS
☆15/18Z
45B
TOKYO
CHICHI JIMA
IWO JIMA
MARCUS
WAKE
ABEH
SAIPAN
GUAM
CFA
ENEWETAK
ULITHI
YAP
WOLEAI
TRUK
PONAPE
★08/06Z
KOSRAE
KWAJALEIN
140°
145°
150°
155°
160°
165°
170°
175°
180°
45°
40°
35°
30°
25°
20°
15°
10°
5°
0°
LEGEND
06 HOUR BEST TRACK POSIT
A SPEED OF MOVEMENT
B INTENSITY
C POSITION AT XX/0000Z
TROPICAL DISTURBANCE
TROPICAL DEPRESSION
TROPICAL STORM
TYPHOON
SUPER TYPHOON START
SUPER TYPHOON END
EXTRATROPICAL
DISSIPATING STAGE
FIRST WARNING ISSUED
LAST WARNING ISSUED

Marge was the sixth tropical cyclone to reach typhoon strength during 1980. She developed west of the Marshall Islands in an area that had shown considerable instability since Typhoon Lex passed through the area in late July.

The convection that signaled Marge's formation first appeared on satellite imagery at 051200Z August 1980. Because of continual intensity variations in the convection, the tropical disturbance was not considered suspect until 060600Z when it was first mentioned in the Significant Tropical Weather Advisory Bulletin (ABEH PGTW). Through most of this period, the convection was embedded in a broad easterly flow. Typhoon Lex still displayed considerable influence over the region, causing the usual easterly current to be diverted northward over the Mariana Islands (Fig. 3-13-1). By 060000Z, Lex had moved far enough to the north that his influence over the easterly flow had weakened and the surface flow had split. One current was still drawn northward toward Lex, while the other current curved southward between the Marshall Islands and the Northern Mariana Islands. The southern current was drawn back into a broad low-level circulation between the eastern Caroline Islands and the Marshall Islands (Fig. 3-13-2). Satellite imagery showed an increase in convection corresponding to this change in the flow pattern.

Convective activity appeared to consolidate near 15N 159E by 061600Z. The convective area continued to expand and by 070000Z covered an area nearly 5-degrees square, with the most intense activity remaining near 15N 159E. Post-analysis shows that Marge formed during the period between 070000Z and 071200Z. An evaluation of the satellite imagery for this time period indicates that tropical depression stage was attained at 070600Z. By 071200Z, a north-south trough oriented along 160E was analyzed at the surface/gradient level. The circulation associated with Marge appeared to be part of this trough (Fig. 3-13-3).

The first reconnaissance into Marge, at 080533Z, observed surface winds of 35 kt (18 m/sec) and a central pressure of 998 mb. Based on these data, the initial warning on

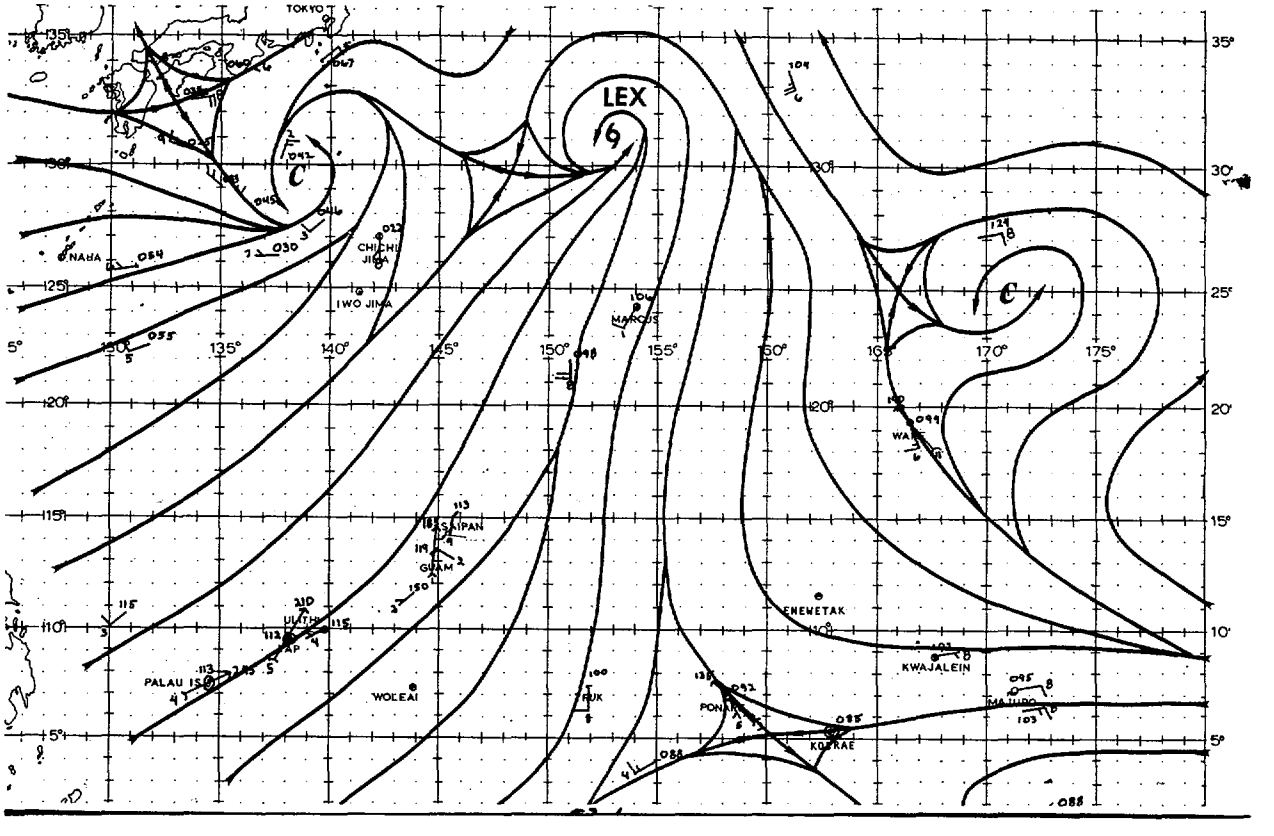

FIGURE 3-13-1. The 051200Z August 1980 surface (⟵) /gradient-level (ddd⟵ff) wind data and streamline analysis. Wind speeds are in knots.

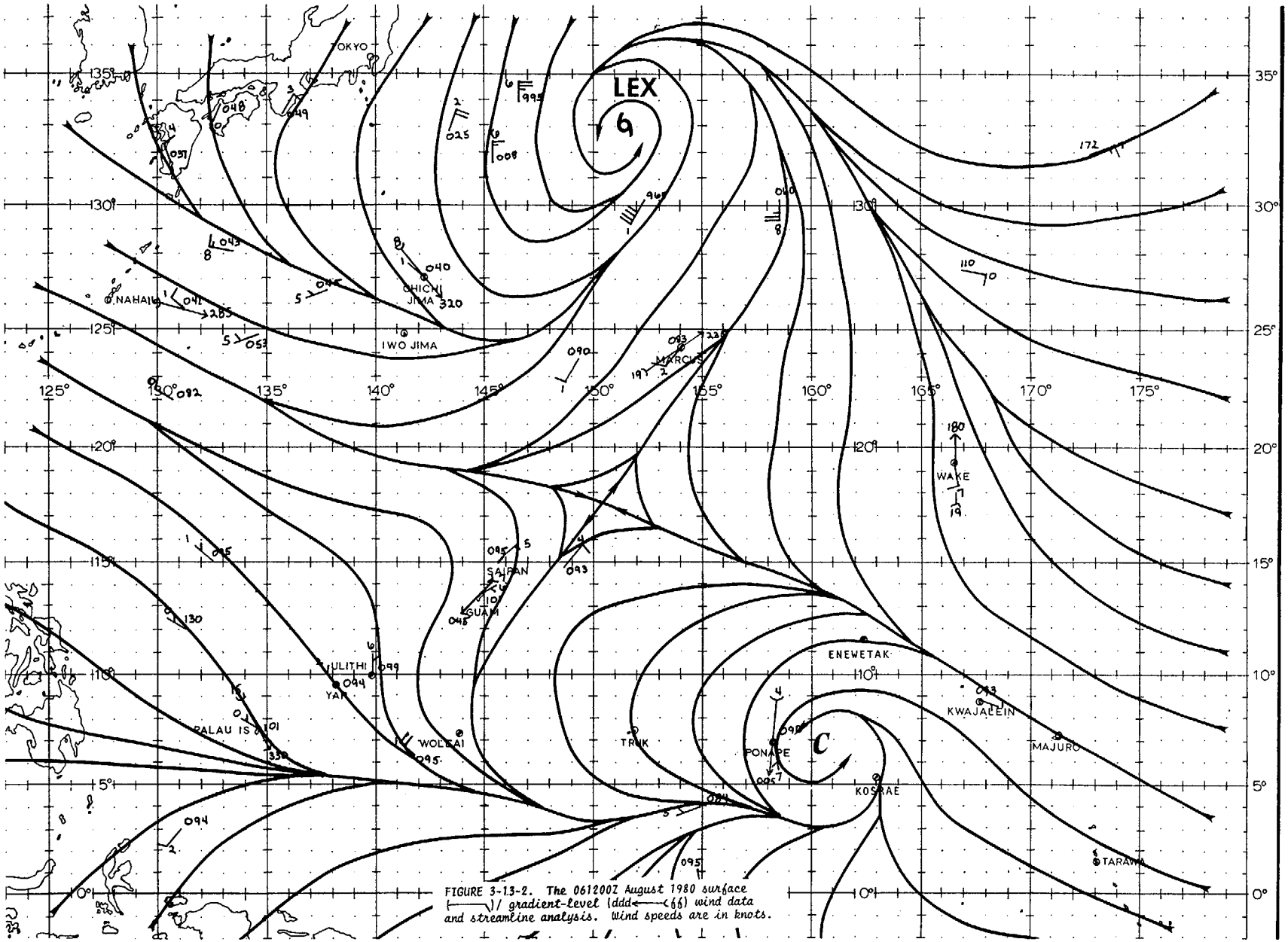

FIGURE 3-13-2. The 0612007 August 1980 surface gradient-level (ddd⟵(ff)) wind data and streamline analysis. Wind speeds are in knots.

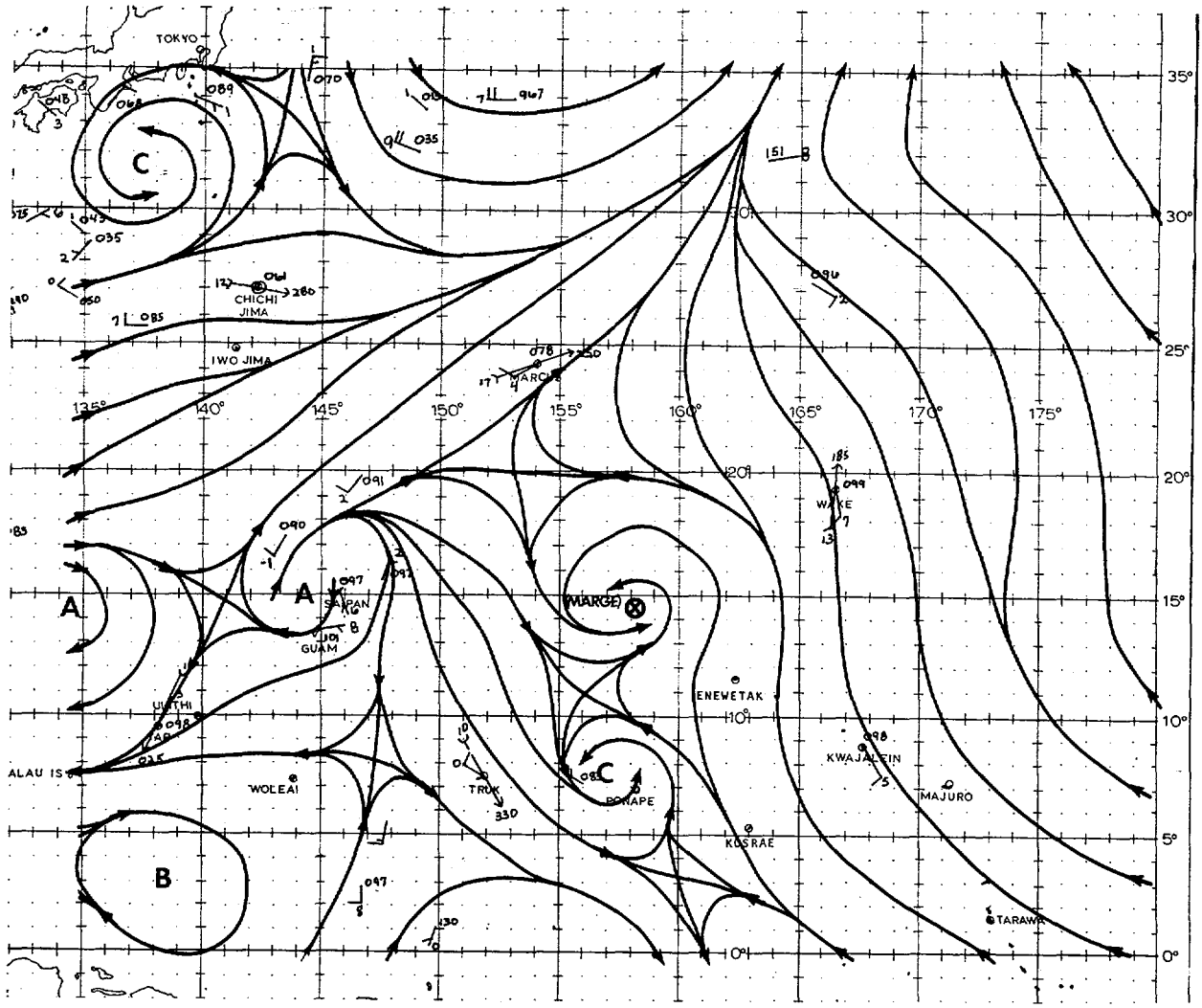

FIGURE 3-13-3. The 071200Z August 1980 surface (⟵)/gradient-level (ddd⟵(ff)) wind data and streamline analysis. Wind speeds are in knots.

Tropical Storm Marge was issued at 080800Z.

Marge initially followed a generally west-southwestward track. Objective forecast aids showed considerable scatter at this stage, a common occurrence during the formative stages of a tropical cyclone. A mid-tropospheric ridge was analyzed to the north of Marge. The key questions at that time concerned the status of this ridge, i.e., was it strong enough to keep Marge on a west-southwestward track, or was there a weakness which could allow her to recurve to the north-northwest. The 080000Z 500 mb streamline analysis (Fig. 3-13-4) indicated that Marge was located in a col, thus providing a channel for a more northerly track than predicted by climatology. The 500 mb reconnaissance data provided by the 54th Weather Reconnaissance Squadron north of Marge proved very valuable in locating this col. A sequence of satellite fixes between 081600Z and 082330Z was the first indication that Marge was reacting to the weakness in the ridge and had started a northward turn. A 090300Z satellite position fix, combined with aircraft fixes at 090615Z and 090839Z, confirmed the northward track.

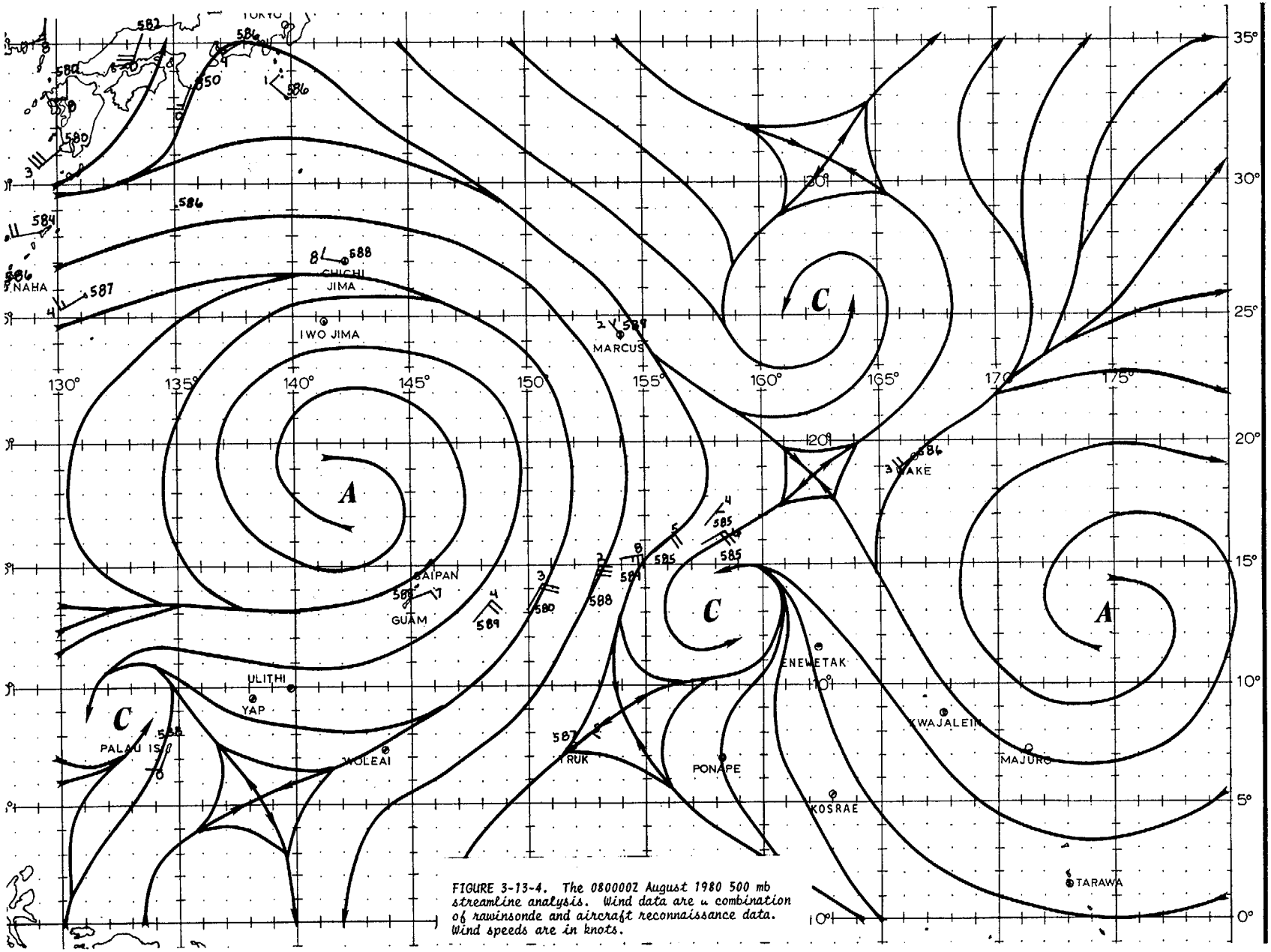

FIGURE 3-13-4. The 0800002 August 1980 500 mb streamline analysis. Wind data are a combination of rawinsonde and aircraft reconnaissance data. Wind speeds are in knots.

Marge continued northward for 17 degrees of latitude on a track between two centers in the subtropical ridge. During the northward trek, Marge intensified to typhoon strength which she maintained for nearly 5 days. A minimum sea-level pressure of 944 mb supported a maximum intensity of 110 kt (56 m/sec) (Atkinson and Holliday, 1977) for 18 hours (Fig. 3-13-5).

By 131200Z, Marge began to encounter strong upper-level westerlies. A second course change accompanied by gradual acceleration and weakening began at that time. Marge tracked east-northeastward and continued to accelerate under the influence of the strong mid-latitude westerlies. The final warning on Marge was issued at 151800Z as she transitioned into an extratropical cyclone and merged with a mid-latitude low pressure system.

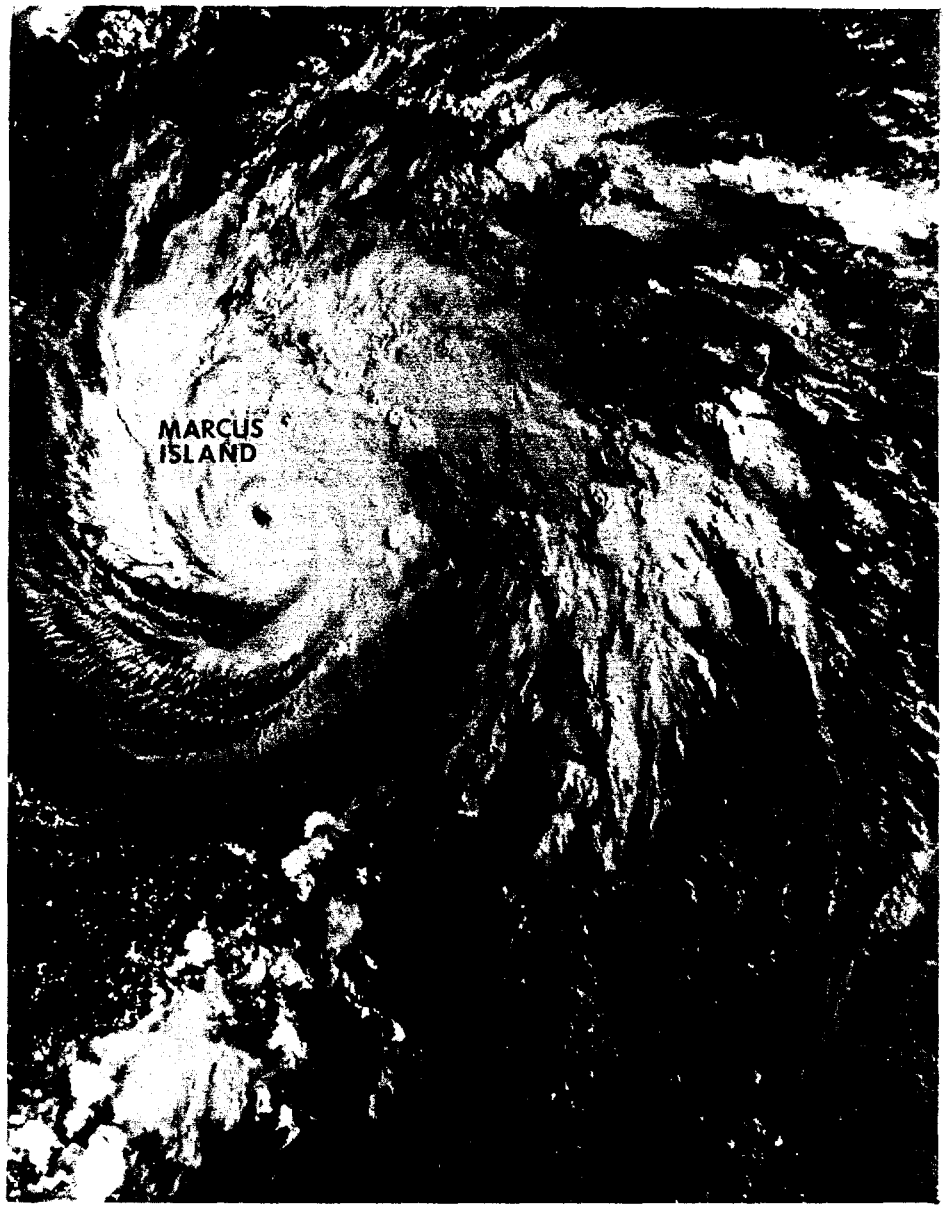

FIGURE 3-13-5. Visual satellite imagery of Typhoon Marge just after reaching maximum intensity and minimum sea-level pressure, 10 August 1980, 2124Z. (NOAA6 imagery)